

Abstract of the Disclosure

A dental or orthopedic implantable prosthetic device (1) which has a bioactive surface of an alloyed layer of material having calcium phosphate compounds. The device is formed by placing a suitable substrate of biocompatible material in a vacuum chamber (10), the substrate is cleaned by ion beam sputtering (18a) and then ion beam sputtering (14a) evolves and deposits (16a) bioactive material onto the surface of the device. The bioactive layer is mixed into the surface forming an alloyed zone by augmenting ion beam (18a) and is grown out to a selected thickness while being continuously bombarded by the augmenting ion beam.